PRS19

ASSESSMENT OF THE CLINICAL AND ECONOMIC IMPACT OF AIR LEAKS DURING POST-OPERATIVE PULMONARY SURGERY USING THE MEDICARE POPULATION

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OBJECTIVES: Estimate the clinical and economic impact to U.S. hospitals of air leaks during post-operative pulmonary surgery using the Medicare Provider Analysis and Review (MEDPAR) data set. **METHODS:** The 2008 The Medicare Provider Analysis and Review (MEDPAR) data set contains records for 100% of Medicare beneficiaries who use hospital inpatient services. For all stays with pulmonary surgery, length of stay (LOS), total charges, and in-hospital mortality rates were compared between those stays including an air leak vs. those stays without an air leak. Unadjusted results were calculated using descriptive statistics (mean, median, frequencies, etc.) Adjusted results were calculated using multivariate regression analysis while controlling for age and gender. **RESULTS:** There were a total of 41,348 hospital inpatient stays with pulmonary surgery in the 2008 MEDPAR data set, of these 8,774 (21.2%) included air leak and 32,574 (78.8%) of which did not. In the MEDPAR data set patients with pulmonary surgery stays including air leak had a similar age distribution to patients without air leak, had a longer LOS on average (10.7 days vs. 7.2 days; $P < .0001$), had more total charges ($78,830 vs. $63,528; $P < .0001$) and were nearly equally likely to die during their stay (14.8% vs. 13.94%; $p = 0.057$). After adjusting for differences in age and gender between the two groups, the incremental LOS and total charges due to the presence of air leak is 3.4 days and $14,532 respectively. The total additional economic impact of having an air leak after pulmonary surgery, estimated by applying patient level adjusted charges to the incidence of air leak, is $127.5 million. **CONCLUSIONS:** The clinical and economic impact to U.S. hospitals of air leaks during or following major pulmonary surgery is significant. The reduction of these air leaks could save considerable hospital resources, payer dollars and patient lives.

PRS20

OUTCOMES ASSOCIATED WITH IATROGENIC PNEUMOTHORAX

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OBJECTIVES: Iatrogenic pneumothorax occurs when air or gas becomes present in the pleural cavity following medical treatment. Besides subjecting the patient to unnecessary health risks, iatrogenic pneumothorax leads to an increased amount of health care resources including observed through patient cost, length of stay, and inpatient mortality. This research aims to quantify the incremental effects of iatrogenic pneumothorax on these three outcomes. **METHODS:** Discharge records from Premier's Perspective database of US inpatients who underwent inpatient pulmonary surgery and were discharged in 2007 were examined. The definition of iatrogenic pneumothorax consistent with ICD-9-CM code 512.1 was used to classify patients. Chi-square tests were used to detect differences between iatrogenic pneumothorax patients and non-iatrogenic pneumothorax patients for three outcomes. Multivariable regression models were used to obtain more precise estimates of the incremental effects of iatrogenic pneumothorax on outcomes while controlling for comorbidities, demographic variables and the patient's primary treatment. **RESULTS:** A total of 112,827 patients were analyzed (8,482 with iatrogenic pneumothorax). Chi-square tests demonstrated that patients with iatrogenic pneumothorax were older ($P < 0.0001$), had lower hospital costs ($P < 0.0001$), a shorter length of stay ($P < 0.0001$), and lower mortality rate ($P < 0.0001$). Log linear modeling demonstrated iatrogenic pneumothorax increases patient costs by 10.49% (95%CI: 8.76%–12.23%). Negative binomial models showed iatrogenic pneumothorax increases patients length of stay by 8.01% (95% CI: 6.21%–9.82%), while no difference was found with respect to mortality. **CONCLUSIONS:** The incremental effects of iatrogenic pneumothorax are shown to significantly increase patient costs and length of stay but not inpatient mortality.

PRS21

BURDEN OF BRONCHIAL ASTHMA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN RUSSIA

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OBJECTIVES: to assess social and economic burden of a Bronchial asthma and Chronic Obstructive Pulmonary Disease in Russian Federation. **METHODS:** "Cost of illness" analysis was performed. Available data on epidemiology of bronchial asthma and chronic obstructive pulmonary disease in the Russian Federation has been analyzed. Experts were questioned to describe the common practice of treating patients with bronchial asthma and chronic obstructive pulmonary disease. Direct costs, indirect costs and intangible costs were calculated. **RESULTS:** According to the state registration data, in 2007 the number of patients with bronchial asthma was 1.3 million and with chronic obstructive pulmonary disease— 2.4 million. The burden of bronchial asthma incorporates direct costs (€220.9 million), indirect costs (€67.4 million) and intangible costs (€69.6 million). The burden of chronic obstructive pulmonary disease is €210.6 million, €212 million, €207 million for direct costs, indirect costs and intangible costs respectively. Cost of BA and COPD is €987.8 million. **CONCLUSIONS:** According to the results of the analysis Bronchial asthma and Chronic Obstructive Pulmonary Disease proved to be an important medical and social problem in Russian Federation.

PRS22

COST OF COPD IN POLAND

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OBJECTIVES: About two million people suffer from COPD in Poland. The aim of this study was to examine direct, mean costs of COPD in Poland under usual clinical practice form societal perspective. **METHODS:** It was an observational retrospective and prospective bottom-up-cost-of- illness study, based on a retrospective sample of patients presenting with COPD. Total medical resources consumption of a sample of COPD patients were collected in 2008 year trough physician—lung specialists. Direct costs of COPD were evaluated based on data from different populations of five clinical hospitals and eight ambulatory cares. Medical resource consumptions were categorized by investigators as usual COPD follow up and number and severity of exacerbations.Resources utilization and cost data are summarised as mean values per patient per year; 95% confidence intervals were derived using percentile bootstrapping. **RESULTS:** In patients studied, number of free –of- exacerbation days was 331, 1, mean number of outpatient exacerbation was 1.27, mean number of exacerbations requiring hospital was 0.24. Average total medical resource consumption of a COPD patient per year was €1006.1. Among this cost €605 was directly related to treatment of stable COPD (costs of drugs, additional exams, costs of medical visits, influenza vaccination and home oxygen therapy), €105.3 to outpatient exacerbation, and €295.8 to exacerbation treated in hospital. **CONCLUSIONS:** The burden of COPD itself appeared to be considerable magnitude from societal perspective in Poland. Overall, the main cost drivers were inpatient care and prescription medication.

PRS23

COMPARISON OF DIFFERENT METHODS FOR ASSESSING ATTRIBUTABLE COSTS: A CASE OF MEDICAL COSTS ATTRIBUTABLE TO OBESE IN PATIENTS WITH ASTHMA

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OBJECTIVES: We compared two alternative methods (recycled prediction and Oaxaca-decomposition) to estimate medical costs attributable to obesity in US adults with asthma. **METHODS:** This study used the 2003–2007 Medical Expenditure Panel Survey to select asthma patients (18–64 years old), excluding patients with pregnancy, malignancy, kidney dialysis, immunodeficiency, or low body mass index (BMI < 18.5 kg/m^2). Obesity was defined as BMI >= 30 kg/m^2. Medication costs were estimated using a generalized linear model with a log-link function and gamma distribution. For the recycled predictions method, predicted treatment costs for obese patients were calculated assuming that obese patients were normal-weight, holding the distribution of covariates obtained from the entire asthma patient sample. With Oaxaca-decomposition, average treatment costs for each group (obese vs. normal weight) were estimated. The differences in average costs between the two groups were then estimated for two components: a) costs due to patient characteristics (endowments), and b) costs due to obese/normal-weight parameters (coefficient), considered as costs attributable to obesity. To compare the two methods, the difference in costs between obese and normal-weight patients was simulated, after matching for patient demographic and clinical characteristics,. All costs were converted to 2009 US dollars using price indices. **RESULTS:** The prevalence of obesity and normal-weight among 7340 asthmatic patients was 32.5% vs. 35.1%, respectively. In the recycled prediction method, costs attributable to obesity were US$1798 (95%CI: US$1717–$1878). In the Oaxaca-decomposition, the difference in medical costs between two groups consisted of US$1357 (95%CI: US$1252–$1462) due to endowments and US$1285 (95% CI: US$1229–$1341) due to coefficient components (i.e. costs attributable to obesity). The difference in costs from the simulation was US$1124 (US$1045–US$1203). **CONCLUSIONS:** Costs attributable to obesity obtained using Oaxaca-decomposition were similar to those of the simulation method, but the costs obtained using the recycled prediction method were higher than those of Oaxaca-decomposition and simulation.

PRS24

LONG-TERM EFFECTIVENESS AND COST-EFFECTIVENESS OF SMOKING CESSATION INTERVENTIONS IN PATIENTS WITH COPD

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OBJECTIVES: We aimed to estimate the long-term (cost-)effectiveness of smoking cessation interventions for patients with chronic obstructive pulmonary disease (COPD). **METHODS:** A systematic review was performed for randomized controlled trials on smoking cessation interventions in COPD patients reporting the 12-month biochemical validated abstinence rates. The different interventions were grouped into four categories: usual care, minimal counseling, intensive counseling and intensive counseling plus pharmacotherapy. For each category the average 12-months continu-

ous abstinence rate and intervention costs were estimated. a dynamic population model for COPD was used to project the long-term (cost-)effectiveness of one year implementation of minimal counseling, intensive counseling and intensive counseling plus pharmacotherapy for 50% of the smoking COPD patients compared to usual care. Time horizon was 25 years. Uncertainty and one-way sensitivity analyses were performed for variations in (the calculation of) the abstinence rates, the type of projection, intervention costs and discount rates. **RESULTS:** Nine studies were selected. The average 12 months continuous abstinence rates were estimated to be 1.4% for usual care, 2.6% for minimal counseling, 6.0% for intensive counseling and 12.3% for pharmacotherapy. Compared to usual care, the costs per QALY gained for minimal counseling, intensive counseling and intensive counseling plus pharmacotherapy were €16,900, €8,200 and €2,400, respectively. Results were most sensitive to variations in abstinence rates and discount rates. **CONCLUSIONS:** Compared to usual care intensive counseling and pharmacotherapy resulted in low costs per QALY gained with ratios comparable to results presented for smoking cessation in the general population. Compared to intensive counseling alone, intensive counseling plus pharmacotherapy was cost saving and dominated the other interventions.

PRS25

A COST-UTILITY ANALYSIS FOR TIOTROPIUM BROMIDE IN THE LONG TERM TREATMENT OF SPECIFIC SUBGROUPS OF ITALIAN COPD PATIENTS

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OBJECTIVES: The UPLIFT trial demonstrated in 5,993 patients with moderate to very-severe chronic obstructive pulmonary disease (COPD) that 4 years of tiotropium bromide were associated with improvements in lung function, quality of life, and exacerbations compared with placebo. The aim of this study is the economic assessment of tiotropium when included in COPD routine care (RC) for specific groups of Italian COPD patients. **METHODS:** A probabilistic patient-level simulation Markov model was developed over a lifetime horizon, with one-year cycles and a 3.5% annual discount rate. Patients were characterized by gender, age, height, smoking status and FEV1. FEV1 time trend was modelled based on the decline recorded in UPLIFT. The mortality of the general Italian population adjusted by smoking status and FEV1 was adopted. Health utilities derived from published Italian studies, while their variation from the UPLIFT. Exacerbation rates derived from an Italian observational prospective study and were adjusted for the relative risk (RR) reported in UPLIFT. Direct sanitary costs were considered. Health care resource consumption for RC, exacerbations and SAEs derived from Italian observational studies and were valued according to current price and tariffs. Cost-effectiveness was assessed for the overall cohort and for subgroups of patients by age, sex, GOLD stage and smoking attitude. **RESULTS:** In the whole cohort, patients treated with tiotropium gained an average (95%CI) 0.50 (−1.63−−6.27) LYs and 0.42 (−0.25−−3.05) QALYs with respect to RC. The incremental lifetime cost was €3,357 (−€10,669−−€29,820). The incremental cost-effectiveness ratio (ICER) was €7,916 /QALY. In the subgroups analysis the ICER ranged from a minimum of €6,627/QALY (females, GOLD III) to a maximum of €13,187/QALY (age <65 y, GOLD IV). **CONCLUSIONS:** The inclusion of tiotropium in RC for moderate to very severe COPD patients represents good value for money in Italy. The analysis across subgroups demonstrated a good stability of the model.

PRS26

COST-EFFECTIVENESS AND BUDGET IMPACT ANALYSIS OF MOMETASONE FUROATE AS MAINTENANCE TREATMENT IN PATIENTS WITH MILD TO MODERATE ASTHMA FROM THE PUBLIC PAYER PERSPECTIVE IN BRAZIL

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OBJECTIVES: In the Brazilian public health care system, mometasone furoate (MF DPI) is not available and budesonide/formoterol (BUD/FF DPI) association is responsible for 86.9% of pharmacy claims for asthma. This study aimed to conduct cost-effectiveness and budget impact analysis (BIA) of MF versus BUD/FF for adult patients with mild to moderate asthma from the public payer perspective. **METHODS:** A decision tree was developed to compare MF and BUD/FF based on indirect comparison once head-to-head studies were not available. The final FEV1 values were converted into probabilities of hospitalization in the first two years in accordance with observational evidence of association between FEV1 and exacerbation requiring hospitalization. Only direct medical costs were considered and unit costs were obtained from Brazilian official lists. BIA assumed pharmacy claims data from the Ambulatory Information System as current scenario (Beclomethasone: 3.1%; BUD: 9.9%; BUD/FF: 86.9%) and a 20% initial market share for MF in substitution to equivalent doses of BUD/FF. **RESULTS:** Indirect comparison indicated 79 hospitalizations per 1000 patients for MF and 82 for BUD/FF during the first 2 years of treatment. Total cost of treatment was 832BRL and 655BRL per patient for MF200 mcg twice a day (bid) and MF400 mcg once a day and 840BRL for BUD/FF 400/12 mcg bid. These findings indicated MF as cost-saving in the proposed scenario with ICER of −2.608BRL and −61.959BRL per avoided hospitalization for MF200 mcg and MF400 mcg, respectively. The estimated budgetary impact for the first year showed a saving of 259,346,480BRL for MF 400 mcg and 10,919,299BRL for MF 200 mcg. **CONCLUSIONS:** MF is a clinically effective option to treat mild to moderate asthma and indirect comparison showed its clinical and economic benefit when compared to the most used anti-asthma medication in the Brazilian public setting. Further research to directly compare both medications and to measure finalistic outcomes alongside clinical trials is needed.

PRS27

COUNTRY ADAPTATION OF A HEALTH ECONOMIC MODEL: THE CASE FOR ROFLUMILAST IN THE NETHERLANDS

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BACKGROUND: The phosphodiesterase-4 enzyme (PDE4) inhibitor roflumilast is a new treatment that targets the underlying inflammation associated with COPD. When approved, roflumilast will be registered as an add-on to bronchodilator treatment in adult patients with severe COPD, with a history of frequent exacerbations. a health economic (HE) micro-simulation Markov model was used to support its submission in the United Kingdom (UK). Pharmaceutical companies can save significantly on the process of HE evidence development, if models can be adapted for use in more than one country. **OBJECTIVES:** To transfer an existing UK HE model to the The Netherlands in order to calculate the cost-effectiveness (CE) of roflumilast in patients with severe COPD from a societal perspective. **METHODS:** The model structure was adapted to include production loss using the friction cost method, and to separate heterogeneity from parameter uncertainty. All input parameters on health care use, costs, utilities, and COPD epidemiology were obtained from Dutch sources, except for the case-fatality rate of an exacerbation-related hospitalization. a direct comparison was made between a combination of a long-acting β2 agonist (LABA) plus roflumilast (ROFLU) and LABA alone. a second, indirect comparison was between LABA + ROFLU and LABA plus an inhaled corticosteroid (ICS). One-way and probabilistic sensitivity analyses were performed. **RESULTS:** From a societal perspective, the incremental CE ratio (ICER) for LABA + ROFLU compared with LABA alone, was €7900. The ICER of LABA + ROFLU versus LABA + ICS was €10,000. The probability that LABA + ROFLU was cost-effective when compared with LABA alone at a threshold of €20,000 versus LABA was 97%. Compared with LABA + ICS this probability was 68.3%. **CONCLUSIONS:** The original UK model was suitable for adaptation to the Dutch setting. The ICERs of roflumilast were below commonly referred threshold values of a QALY.

PRS28

ECONOMIC EVALUATION OF FLUTICASONE PROPIONATE/SALMETEROL COMBINATION THERAPY AND MONTELUKAST IN ADULT PATIENTS WHO ARE SYMPTOMATIC ON SHORT-ACTING BETA 2-AGONIST ALONE

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OBJECTIVES: To estimate the incremental cost-effectiveness of SFC verus montelukast in adult patients with persistent asthma. **METHODS:** A decision-analytic model was developed from a randomized, double-blind, double-dummy, 12-week clinical trial were analyzed. Efficacy end points included, symptom-free days (SFDs) during the 12-week period. The study assumed the Mexican health care perspective with costs in 2010 US dollars, and hence only direct costs were included in the analysis. Direct costs included those related to study drugs, emergency room department visits, unscheduled physician visits, and rescue medication. The incremental cost-effectiveness ratio (ICER), which is the mean difference in average costs divided by the mean difference in average effectiveness, was calculated for the effectiveness outcomes (SFDs). Issue of uncertainty was addressed by means of a probabilistic Monte Carlo simulation, which attributed stochastic distributions to model inputs. **RESULTS:** Treatment with FSC resulted in a significantly greater improvement in the mean percentage of symptom-free days compared with MON 48.9 and 21.7 respectively (p 0.001). In the base case, patients initiated on SFC displayed a 45% reduction in overall cost as compared with patients initiated on MON US $186 versus $US258, respectively, respectively). SFC dominated the use of MON because of previously demonstrated lower incidence of *Asthma exacerbations* and rescue free days. Sensitivity analyses determined that univariate changes in all model variables, including medication cost, and cost of treating exacerbation, did not impact overall results. a Monte Carlo simulation analysis found that use of SFC remains the best overall treatment strategy when taking into consideration the potential variance in all model assumptions. Compared with MON, SFC is estimated to be both more effective and more economically favourable, with a probability of almost 92%. **CONCLUSIONS:** The decision model indicated that use of SFC as treatment in patients with asthma should result in lower overall treatment costs relative to the cost of MON.

PRS29

COST-EFFECTIVENESS OF SALMETEROL/FLUTICASONE PROPIONATE COMBINATION VERSUS LEUKOTRIENE MONTELUKAST FOR THE CONTROL OF PERSISTENT ASTHMA IN CHILDREN

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OBJECTIVES: To assess the incremental cost-effectiveness of SFC compared with MON for the control of persistent asthma in children. **METHODS:** We conducted an economic evaluation on a 12-week prospective randomized open-label parallel-group